

PERSONAL PREPAREDNESS GUIDE

BIOLOGICAL AGENTS: ANTHRAX

What it is

Anthrax is a potentially fatal infection caused by bacteria called *Bacillus anthracis*. The bacteria occur mostly in warm-blooded animals, but it can also infect humans. Naturally occurring anthrax spores live in the soil throughout Asia, Africa and Great Britain and in U.S. locations such as Texas, Oklahoma and the Mississippi Valley. Spores can survive in adverse conditions and still remain capable of causing disease. Research on anthrax as a biological weapon began more than 80 years ago. Today, at least 17 nations are believed to have offensive biological weapons programs; it is uncertain how many are working with anthrax.

The three types of anthrax infections are cutaneous anthrax, gastrointestinal anthrax and inhalation anthrax – the most deadly. People can be infected with anthrax through skin contact, by drinking contaminated water, eating contaminated meat, or by inhaling the bacteria or spores.

Symptoms

Symptoms of the disease vary depending on how the disease was contracted but usually occur within seven days. Cutaneous anthrax could result in lesions, black ulcers, headaches, muscle aches, fever and vomiting. Symptoms of gastrointestinal anthrax include nausea, loss of appetite, vomiting and fever followed by abdominal pain, vomiting of blood and severe diarrhea. Initial symptoms of inhalation anthrax may resemble the common cold or flu -- fever, coughing and chest pains. After several days, the symptoms may progress to severe breathing problems and shock. Symptoms can develop two days to eight weeks after exposure.

Testing

Early diagnosis of inhalation anthrax would be difficult and would require a high index of suspicion. The disease is diagnosed by isolating the bacteria from the blood, skin lesions or respiratory secretions or by measuring specific antibodies in the blood. Testing for inhalation anthrax involves taking swabs of the nasal passages that are examined for evidence of spores.

Prevention/Treatment

The CDC states that there are no scientifically proven recommendations for preventing exposure from the mail. However, there are some commonsense steps people can take, such as not opening suspicious mail, keeping mail away from the face when opening, not blowing or sniffing mail contents, avoiding vigorous handling of mail, such as tearing or shredding, and washing hands after handling mail. Anthrax is generally not transmitted from person to person.

If contact with anthrax is suspected, health officials recommend isolating the area where the exposure is believed to have occurred, removing garments that may have had contact with the bacteria, washing any potentially contaminated body parts with soap and water, and contacting law enforcement officials immediately.

Early antibiotic use is essential – a delay even in hours may lessen the chances for survival. For those treated with antibiotics, the risk of recurrence remains for at least 60 days. Doctors can prescribe effective antibiotics. Penicillin, tetracycline, erythromycin, cloramfenicol, doxycyclin and ciprofloxacin, known as Cipro, are some of those approved treatments.

A human vaccine for anthrax was first developed in 1954. There are limited supplies of a human vaccine for anthrax, and it is generally limited for military personnel, hospital and public safety workers.

Recovery Potential:

About 20 percent of untreated cases involving cutaneous anthrax are fatal, and 25 percent to 60 percent of untreated cases of gastrointestinal anthrax are fatal. In the case of untreated inhalation anthrax, about 90 percent of such cases are fatal.

Environmental Cleanup

In areas where the presence of anthrax is suspected, hazardous materials crews wear protective suits with a self-contained breathing apparatus while they gather swabs and adhesives that will later be tested in a lab for the presence of anthrax. The crews use several chemicals, including sandia foam, nanoemulsion, formaldehyde fumigation and sodium hypochlorite to destroy anthrax spores.

The information was compiled from the following sources:

Anthrax as a Biological Weapon

<http://jama.ama-assn.org/issues/v281n18/full/jst80027.html>

Centers for Disease Control and Prevention

<http://www.bt.cdc.gov/Agent/Anthrax/AnthraxGen.asp>

The Department of Defense

<http://www.anthrax.osd.mil/>

The Johns Hopkins University

<http://www.hopkins-biodefense.org/pages/agents/agentanthrax.html>

The Washington Post

<http://www.washingtonpost.com/health/conditioncenter/anthrax/>